

Grade 10 Applied Chemistry Review

Chemical Reactions

A change in matter that produces new substances with new properties

Reactants: substances that **react** together in a chemical reaction

Products: new substances **produced** (made) in a chemical reaction

Compounds

Compounds are a combination of two or more elements. They can be divided into two categories: ionic and molecular.

Ionic Compounds:

Formed when **metal** (negatively charged) atoms bond with **non-metal** (positively charged) atoms. This bond occurs because the negatively and positively charged atoms are attracted to each other.

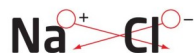
Eg. NaCl (table salt)

They share the following common properties:

Solid at room temperature

High melting point

Conducts electricity when melted or dissolved in water.



Chemical Formulas

Short form for a chemical compound

Made up of letters and subscript numbers

Letters: the chemical symbols; tell which elements are in the compound

Subscript Numbers: tell how many atoms of these elements are in the compound

Example: MgCl_2

Mg and Cl represent the elements Magnesium and Chloride.

2 represents that there are two Chloride atoms



Molecular Compounds:

Non-metal atoms share electrons with other **non-metal** atoms including hydrogen

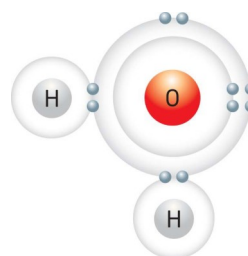
Eg. H_2O (water)

They share the following properties:

Solids, liquids, or gases at room temperature

Lower melting points than ionic compounds

Do not conduct electric current when melted or dissolved in water, except in the case of certain



Types of Chemical Reactions:

Synthesis Reaction:

One compound breaks down into two or more simpler compounds or elements



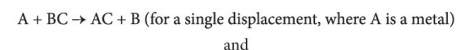
Decomposition Reaction:

One compound breaks down into two or more simpler compounds or elements



Single Displacement:

One element takes the place of another element in a compound



Double Displacement:

The metal ions of two different compounds exchange places



Chemical Equations

<u>Types of Equations</u>	<u>Example</u>
Word equation Reactants and products written out in words	Hydrogen + Oxygen → Water
Chemical equation Reactants and products are written in their chemical compounds	$\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
Balanced Chemical equation Reactants and products are written in their chemical compounds and have the correct number of atoms of each element	$2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$

Acids and Bases

Acids and bases are common substances that you come in to contact with every day.

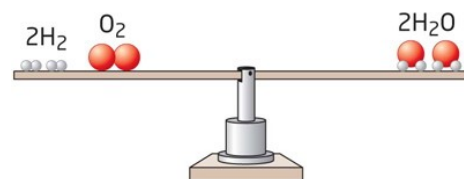
Acid- a compound that tastes sour, corrodes metals and tissue, and turns blue litmus paper red

Base- a compound that tastes bitter, has a slippery texture corrodes tissue, and turns red litmus paper blue

Acid/Base Indicator- a substance that changes colour when added to an acid or base.

Law of Conservation of Mass

During a chemical reaction, the total mass and number of atoms of the reactants equal the total mass and number of atoms of the products.



pH Scale and Indicators

The pH scale is a scale from **0 to 14** that describes how acidic or basic a substance, with 7 indicating neutral.

Neutralization Reactions

A neutralization reaction is a reaction between an acid and a base that “neutralizes” their acidic and basic properties.

